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**METHOD, DEVICE AND SYSTEM FOR OPERATING MOBILE
TELECOMMUNICATION TERMINALS IN A PUBLIC, CELLULAR
MOBILE RADIO NETWORK**

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The invention relates to a method, a device and a system for operating mobile telecommunication terminals in a public, cellular mobile radio network comprising at least one base transmitting-receiving station and one mobile station, particularly a mobile telephone according to the preamble of patent claim 1, 5 or 6.

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Wireless communication terminals, i.e., mobile radio transmission/reception devices, which are used as terminals, are known. Wireless telephones, mobile telephones, satellite radio telephones, trunk radio telephones etc. are only cited as examples here.

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Furthermore, it is known to operate such telecommunication devices or terminals within international mobile radio networks according to the GSM standard (Global System for Mobile Communication, for example.

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Telephone users have communication possibilities in such mobile radio networks, and data services and further services can be performed via the network. Known public mobile radio networks can be connected together with further networks such as the public telephone network or, respectively, the ISDN network, and also with local, line-bound networks. Moreover, connections from and to other public mobile radio networks are supported as well.

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The GSM mobile radio network is a mobile communication system, which is cellularly composed of a great number of radio units, whereby each radio cell is operated by a base transmitting-receiving station, which respectively sets up connections to the mobile stations of the subscribers via corresponding air interfaces.

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The base transmitting-receiving stations are normally operated by a what is referred to as base drive. A plurality of base drives are connected to a mobile switching center, which assumes the required switching-oriented functions in a fixed coverage area in the radio network.

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The increase in the use of wireless telecommunication offers by possession and use of mobile stations leads to dangers at locations where low transmission performances in critical frequency areas can already cause interferences of sensitive electronic devices. For example, this is the case when a mobile station is used without authority, such as the use of a mobile telephone in civil planes. The same dangers are present when mobile telephones or mobile telecommunication terminals are used, for example, in hospitals or close to explosion-endangered spaces such as gas stations.

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The intended or unintended use of mobile telephones in public areas such as theaters, movie theaters or suchlike is also experienced as disturbing.

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Therefore, the invention is based on the object of proposing a method, a device and a system for operating mobile telecommunication terminals in a public, cellular mobile radio network with at least one base transmitting-receiving station and one mobile station, particularly a mobile telephone, which makes it possible to assure that mobile telephones or, respectively, mobile telecommunication terminals are switched off or deactivated in particularly security-relevant areas with regard to electromagnetic compatibility or in other endangered areas, so that interfering high-frequency transmission performance is not emitted.

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The object is achieved by a method according to the definition of patent claim 1, by a device as it is defined according to the subject matter of patent claim 5, and/or by a system for operating mobile telecommunication terminals according to the features of patent claim 6, whereby the subclaims represent at least expedient embodiments and further developments of the invention.

The basic inventive idea with respect to the method is to fashion a mobile telephone such that it logs off from the respective adjacent base transmitting-receiving station and goes into the inactive state when receiving a respectively specified first message of a locally emitting transmitter of a small capacity.

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The mobile telephone can be automatically reactivated and can log into the network when receiving a second message from the locally emitting transmitter. The network login and logoff ensues in the framework of a standard protocol exchange with the respective adjacent base transmitting-receiving station.

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It is also possible with respect to the method to manually activate the mobile station and to log into the network when a second message is not present when the transmission area of the locally emitting transmitter is left, whereby a transition into the active mode or into the standby mode can also be automatically provided when the specified message is not received or is no longer received over a prescribable time interval.

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The reception of the specified messages can be optically and/or acoustically signaled to the user of the mobile telephone, whereby it is also conceivable to display the message content or the message parameters at the mobile telephone display.

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The optical and/or acoustic signalization calls the attention of the mobile radio telephone user to the effect that he enters an endangered area and to the effect that his mobile telephone will soon pass over into the inactive state. It is inventively assured that - as long as the mobile radio telephone user is situated with his mobile telephone in the transmission range of the transmitter of a small capacity and a disabling code is sent and received - he is not capable of deliberately operating the telephone again, with the consequence of interfering high-frequency radiation.

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In less critical areas, the mobile station need not be completely deactivated but can be kept in the idle mode, whereby, after the transmission range has been left, an automatic transition into the standby modus occurs upon employment of the conventional mechanisms and processes for the mobility administration without the user of the mobile station having to input data or commands.

The inventive device for operating mobile telecommunication terminals in a public, cellular mobile radio network with at least one base transmitting-receiving station and one mobile station, particularly a mobile telephone with a transmitter-receiver assembly, a micro controller, a current supply unit and input assemblies and output assemblies proceeds from a so developed transmitter-receiver assembly, which comprises a pico cell radio device for receiving and evaluating specified messages. The pico cell radio device leads the received specified messages onto the micro controller in order to initiate it to transmit a network logoff signal via the transmitter-receiver assembly and to deactivate or, respectively, switch off the current supply unit of the mobile telephone, whereby the pico cell radio device remains active.

In addition to the actual transmitter-receiver assembly, i.e., the operating radio system for the mobile communication, each mobile telecommunication terminal therefore inventively contains a second low-power radio system, particularly a receiving system for the communication over a small distance, i.e., in the framework of a what is referred to as pico cell.

A counter-station, i.e., a pico cell transmitter fixed station is situated, for example, at airplane entries, at entries of hospitals etc. and sends the specified messages.

As soon as the pico cell radio device of the respective mobile station comes close to a pico cell transmitter fixed station, namely such that an error-free data exchange becomes possible, the fixed station informs the mobile telecommunication terminal

via the pico cell by means of a separate code, i.e., informs the messages, that the mobile telephone must be deactivated.

Subsequently, the mobile telephone switches off the cellular radio system, whereby
5 the pico cell radio device remains active. In this way, the pico cell radio device is capable of receiving a further message or code sent by the fixed station in order to effect a reactivation.

In an embodiment of the invention, a DECT system or blue-tooth system, which is
10 already integrated into the mobile telephone or which is additionally arranged, is used for a pico cell radio system. For example, a DECT radio part can be used for what are referred to as dual mode mobile telephones DECT-GSM. The pico cell radio system therefore is not or is not only used for forwarding user data but also for remotely controlling mobile radio device functions independently of actions of the user or,
15 respectively, has such a function in addition.

Due to the signaling of the network login in connection with a call by the pico cell transmitter fixed station, it can be signalized to the callers that a connection cannot be set up at the moment due to a specific location where the mobile radio network user
20 is. It is possible here, in a way known per se, to switch to a call forwarding or a call memory. An IMSI detach information is normally transmitted to the network or, respectively, the respective base transmitting-receiving station prior to the deactivation the respective mobile station, for example in the framework of a GSM mobile radio network. [sic]

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The invention is subsequently explained in greater detail on the basis of an exemplary embodiment and upon reference to a Figure.

The Figure shows a basic arrangement of a pico cell fixed station in the area of the
30 door opening of an airplane.

A pico cell transmitter fixed station PS, which is capable of transmitting specified messages of small capacity, i.e., locally, is arranged at the airplane body F in immediate proximity of a door opening.

- 5 If a mobile telephone MT reaches the radiation range of the fixed station PS - for example when a user enters the airplane via the door opening FT - the pico cell radio device FS in the mobile telephone MT receives the corresponding message.

10 After this message has been received, the mobile telephone MT logs off from a base transmitting-receiving station (not shown) and the mobile station is completely deactivated subsequent to the network logoff.

15 Instead of a complete deactivation of the mobile part, it can also be merely initiated that it is no longer possible to access the respective radio cell via a corresponding transmitter-receiver assembly in the mobile telephone MT and, on the other hand, that the pico cell radio device FS in the mobile telephone MT remains receive ready. In this embodiment, the mobile telephone is activated again and logged into the network in that a second message is transmitted on the part of the locally emitting transmitter, i.e., the pico cell transmitter fixed station PS. The messages to be transmitted are
20 symbolized by the reference letter C, whereby the transmission path is represented by arrows.

It is certainly possible with respect to the exemplary embodiment to manually reactivate the mobile telephone MT and to log into the network after the transmission
25 range of the locally emitting transmitter or, respectively, of the pico cell transmitter fixed station PS has been left.

The entering into the transmission range of the fixed station FS is preferably optically and/or acoustically signalized to the user of the mobile telephone MT.

As a result of the described exemplary embodiment, it is possible to assure that mobile telephones cannot be intentionally or unintentionally used in particularly security-relevant or endangered areas. In this way, interferences of sensitive electronic devices, for example in civil planes or suchlike, can be avoided. A call
5 blocking, which can be automatically cancelled when the area is left, can also be externally imposed or enforced onto the mobile telephone in particularly relevant areas and also at locations where interferences are undesired.

Optical and/or acoustic signaling measures that are known per se are used upon
10 utilization of the corresponding assemblies of the mobile telephone in order to indicate the entering or leaving of the pico cell area with the corresponding consequences with respect to the subscriber and user of the mobile radio network.

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